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ABSTRACT

Research has documented that individuals with mental retardation can learn and benefit from relaxation training. To investigate the effects of anxiety reduction through relaxation training on the performance of a complex learning task, 15 mentally retarded adult males were studied. Following performance on an anxiety measure, subjects were assigned to either the experimental, relaxation training (RT) group or the control, assertiveness training (AT) group. Experimental group subjects participated in progressive muscle relaxation exercises, while control subjects participated in an operant-based assertiveness training program. Following the training, subjects attempted to solve button maze tasks. Data were collected on self-reported and experimenter-rated anxiety. A posttest session, without intervention, was conducted after 1 week. An analysis of the results showed that on the posttest learning task, RT group performance was superior to AT group performance. Self-assessment and experimenter ratings of anxiety for both groups were initially equivalent but diverged quickly in subsequent sessions, with the RT group demonstrating less anxiety and better anxiety control than the AT group. These findings suggest that retarded individuals can learn muscle relaxation and can benefit from its results. (BL)

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Effects on Learning of Relaxation Training with Mentally Retarded Adults

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Effects on Learning of Relaxation Training with Mentally Retarded Adults

Therapeutic interventions with individuals classified as mentally retarded predominantly have been formulated within an operant paradigm. Although some exceptions do exist, notably the self-control therapies (e.g. Karoly and Kanfer, 1982; Benson et al., 1984), very little research has been conducted on the applicability of respondent conditioning with mentally retarded individuals (Harvey, 1979). This report summarizes a study which investigated the effects on the learning of complex tasks of training male mentally retarded adults in progressive relaxation training.

There are numerous reasons why it was believed that mentally retarded might benefit from training in relaxation skills. Research (Donaldson & Menolascino, 1977) has indicated that anxiety related behaviors are more common within the retarded population than non-retarded populations. Irrational and excessive fears are widespread in this population (Peck, 1977). And, these interventions have been shown effective with non-retarded populations on problems that are widely exhibited in retarded populations (including behavioral, academic and adjustment)(Harvey, 1979).

Furthermore, previous research has suggested that mentally retarded individuals probably could learn relaxation skills. Peck (1977) in her study on systematic desensitization with mentally retarded subjects reported that of the 8 who were trained in relaxation, all but one "learned to relax without undue difficulty." Obler & Terwilliger (1970) also in a systematic desensitization study reported that with children diagnosed as both minimal brain dysfunction and monophobic that systematic desensitization was effective and that "intellectual ability ... did not affect the results"(p. 318). In addition, Cautella & Groden (1980),in a relaxation training manual for people with special needs indicate

that disruptive behaviors can be decreased and self-help behaviors can be increased as a consequence of training in relaxation.

This study investigated the effects of anxiety reduction through relaxation training on the performance of a complex learning task. The relaxation intervention was studied in isolation from other intervention components (e.g. hierarchy or stimulus exposure). High anxiety interfers with performance on complex learning tasks (Farber & Spence, 1953; Matarazzo, Ulett, and Saslow, 1953; Sieber, 1969; Yerkes & Dodson, 1908). If relaxation is effective then anxiety will be decreased. The major experimental hypothesis for this study was that anxiety reduction for high anxious mentally retarded individuals would be expected to facilitate learning of a complex learning task in comparison to control subjects. Other experimental hypotheses were a) since relaxation training teaches a general relaxation response and the control condition, assertiveness training, teaches a response specific to social situations, the relaxation group was expected to more quickly and effectively reduce anxiety than the assertiveness group and b) assuming that relaxation systematically trains an awareness of the different states or cues associated with relaxation and tension, then it was expected that the correlation between the subjects' self-assessment of anxiety and the experimenter's rating of subject anxiety, would be greater for the relaxation group than the assertiveness group.

Method

16 volunteer subjects participated in this pretest-posttest repeated measures study. All subjects were referred from chicago area facilities serving the developmentally disabled. Subjects were matched for anxiety using pretest scores on the 'What I think and Feel'(WITF) scale (Reynolds & Paget, 1981) and referral source, then randomly assigned to either the experimental, relaxation training (RT), or the control, assertiveness training (AT), groups. All subjects scored at least one standard deviation above the mean for anxiety on the WITF, had Wechisler IQs all under 85, acknowledged being generally nervous or anxious, and were paid for their participation ($1 was the modal amount per session). One RT subject dropped out of the study. For the remaining 15 subjects, average age was 27, WITF anxiety was 23, and Wechsler FSIQ was 62.

The progressive muscle relaxation intervention was modified and developed from manuals by Bernstein & Borkovec (1977) and Cautella & Groden (1980). The exercises consisted of two tension and relaxation cycles for each of 14 muscle groups followed by focused breathing and cue-control. The assertiveness training intervention was on operant based program. It first trained discrimination of shy (non-assertive), mean (aggressive), and assertive behavior and was followed by modeling and behavioral rehearsal.

The learning task was the Freedman button maze (Freedman and Lewis, 1984). This instrument consists of 10 rows of 4 buttons and 1 light contained in a triangular metal chassis. Subjects were instructed to turn off the light in each row by pressing the corresponding correct button. Subjects were exposed to mazes of 5 rows by 2 columns in the intervention sessions and to both a 5X2 and a 10X4 maze in the posttest.

Insert figure 1 about here

Intervention sessions lasted about 1-1hr 15min, were conducted at the referral sites, and consisted of the following major components: the intervention (about 45 minutes), 3 problems in the 5X2 maze (up to 30 minutes), 5 subject self-ratings if anxiety taken at various times in the intervention, and the experimenter rating of subject anxiety taken immediately post-intervention and prior to starting the mazes (the behavioral checklist). The anxiety ratings used for comparisons were the subjects' and experimenter's assessment of anxiety recorded immediately post-intervention(see figure 2).

Insert Figure 2 about here

The posttest session was conducted about one week after the final (8th) intervention session. In the posttest session, no intervention training was conducted. The major events of this session ar shown in figure 3. The anxiety ratings compared in this session were the behavioral checklist and the subject self-rating #2. There were only 1 5X2 maze and 1 10X4 maze administered in this session. Subjects were debriefed immediately after this session.

Insert Figure 3 about here

Results and Discussion

Performance on complex learning tasks

A repeated measures ANOVA of errors to criterion for the 5X2 maze across intervention sessions did not reveal a significant between groups effect. The interaction was, however, near significant ($p < .10$) and all comparisons of means were in the predicted direction. Numerically, RT group performance demonstrated fewer errors than the AT group. These results did not support the experimental hypothesis(see figure 4).

Insert Figure 4 about here

The hypothesis received its major support from an analysis of the data from the posttest learning task performance (10X4 maze). On the 10X4 maze the RT groups performance was superior to the AT groups performance ($p < .01$). Even when possible effects due to the uncontrolled variables age, FSIQ, and PSIQ (which at pretest showed almost significant differences ($P < .15$)); the RT groups performance on this maze was significantly superior to the AT groups performance. This was accepted as support for the hypothesis.

Subject Anxiety Ratings

Subject self-assessment of anxiety showed a significant between groups effect ($p < .01$) and a near significant interaction ($p < .10$). Graphically, Subject self-assessment of anxiety seemed to be initially equivalent for the two groups and diverge quickly in subsequent sessions (see figure 3).

Insert figure 5 about here

Experimenter rating of subject anxiety on the behavioral checklist showed a significant between groups effect ($p < .01$) and a significant interaction on a repeated measures ANOVA. Observed levels of anxiety initially were equivalent, but in later sessions the two groups anxiety levels quickly diverged. Overall, the RT group demonstrated less anxiety less anxiety than the AT group(see figure 6).

Insert Figure 6 about here

To validate the above behavioral checklist, interrater reliability was evaluated. In the 6th and 7th sessions, additional raters completed the checklist at the same time as the major experimenter. Interrater reliability was signficant ($r = .89$ $p < .001$). Furthermore, the subject's self-assessment of anxiety and the experimenter's rating of subject anxiety were significantly correlated ($r = .71$ $p < .001$).

Together, these anxiety ratings indicated that the RT subjects demonstrated better anxiety control than the AT subjects. It was also observed that graphically, there seemed to be a slight increase anxiety for the RT group in the last few sessions. We ascribe this apparent phenomena to two things: a) subjects were not confident in thier ability to self-relax after only 8 sessions and b) Termination of the study (therapy) was being discussed. It is suggested that more than 8 interventions are needed to adequately train mentally retarded individuals in relaxation.

Relaxation trains awareness of the states/cues associated with tension

It was predicted that the corrrelation between the subject's self-assessment of anxiety and the experimenter's rating of subject anxiety would be greater for the RT than the AT group. This relationship was not found when the correlations were obtained session by session. The hypothesis was supported when all the data was combined and correlations were obtained across intervention sessions. The results showed that the correlation for the AT group ($r=.13$) was not significantly different from zero ($p > .75$). However, the correlation for the RT group was significant ($r= .72$ $p < .05$).

Observations

Similar to findings from previous research (Amerikaner & Summerlin, 1982), it was observed that RT subjects after training in relaxation seemed less distracible and more foccused in their attention than the AT subjects. Subjects also seemed to be learning a different response to the mazes as shown in figure 4. RT subjects seemed to be less anxious and more able to maintain control over their arousal during presentation of the learning mazes within the session(see figure 7).

Insert Figure 7 about here

Conclusions

We conclude that retarded individuals can effectively learn progressive muscle relaxation as an anxiety control response. It is suggested that when conducting relaxation training with individuals from this population, that therapists plan for more than 8 training sessions. More than 8 training sessions are probably required if one goal is for the subjects' to independently utilize relaxation as anxiety management. Finally, our data do support the use of relaxation to train a more accurate assessment of anxiety. We would recommend the appropriate therapeutic use of relaxation training with mentally retarded highly anxious idividuals.

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Figure 1

Button Maze

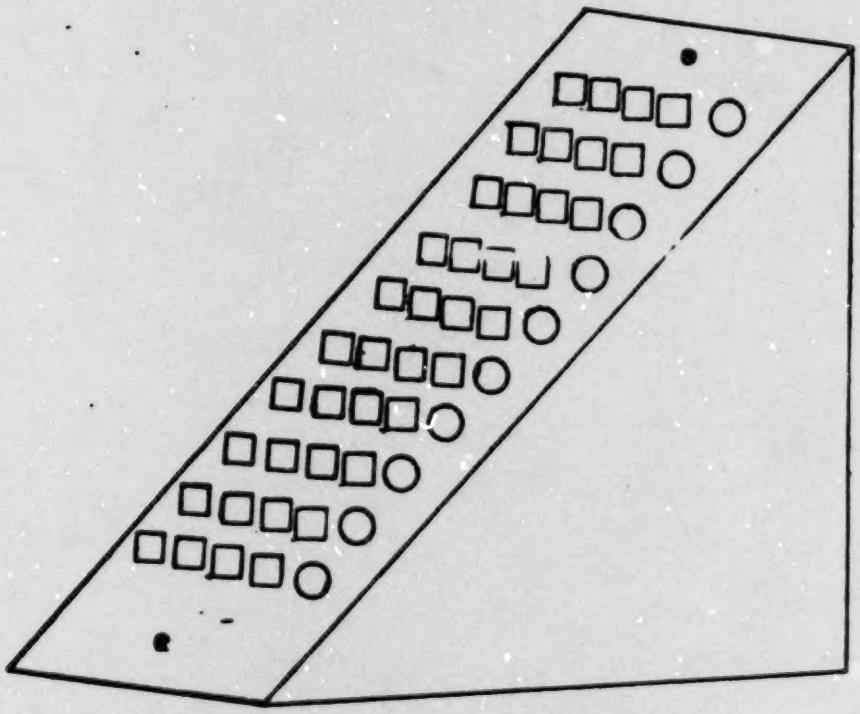

Figure 2

TIME LINE INTERVENTION SESSIONS

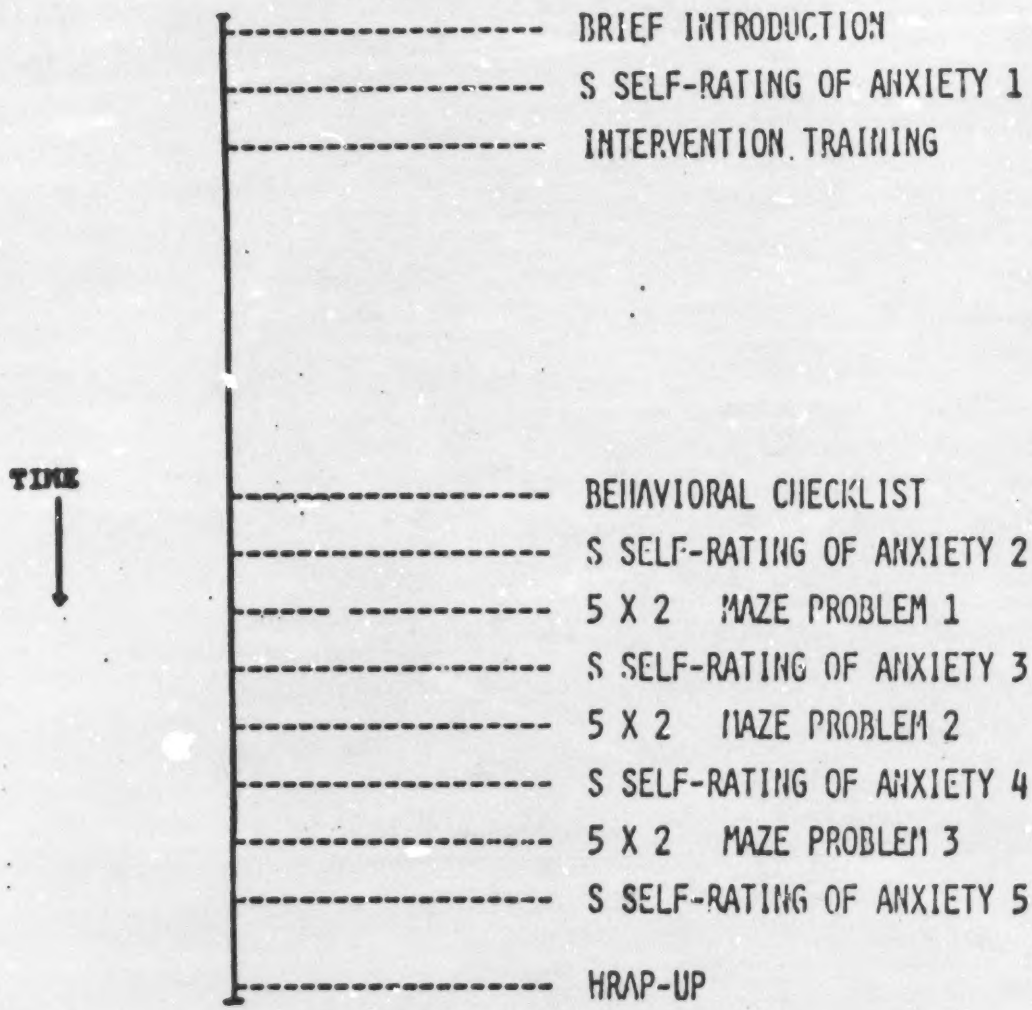

Figure 3

TIME LINE POSTTEST SESSION

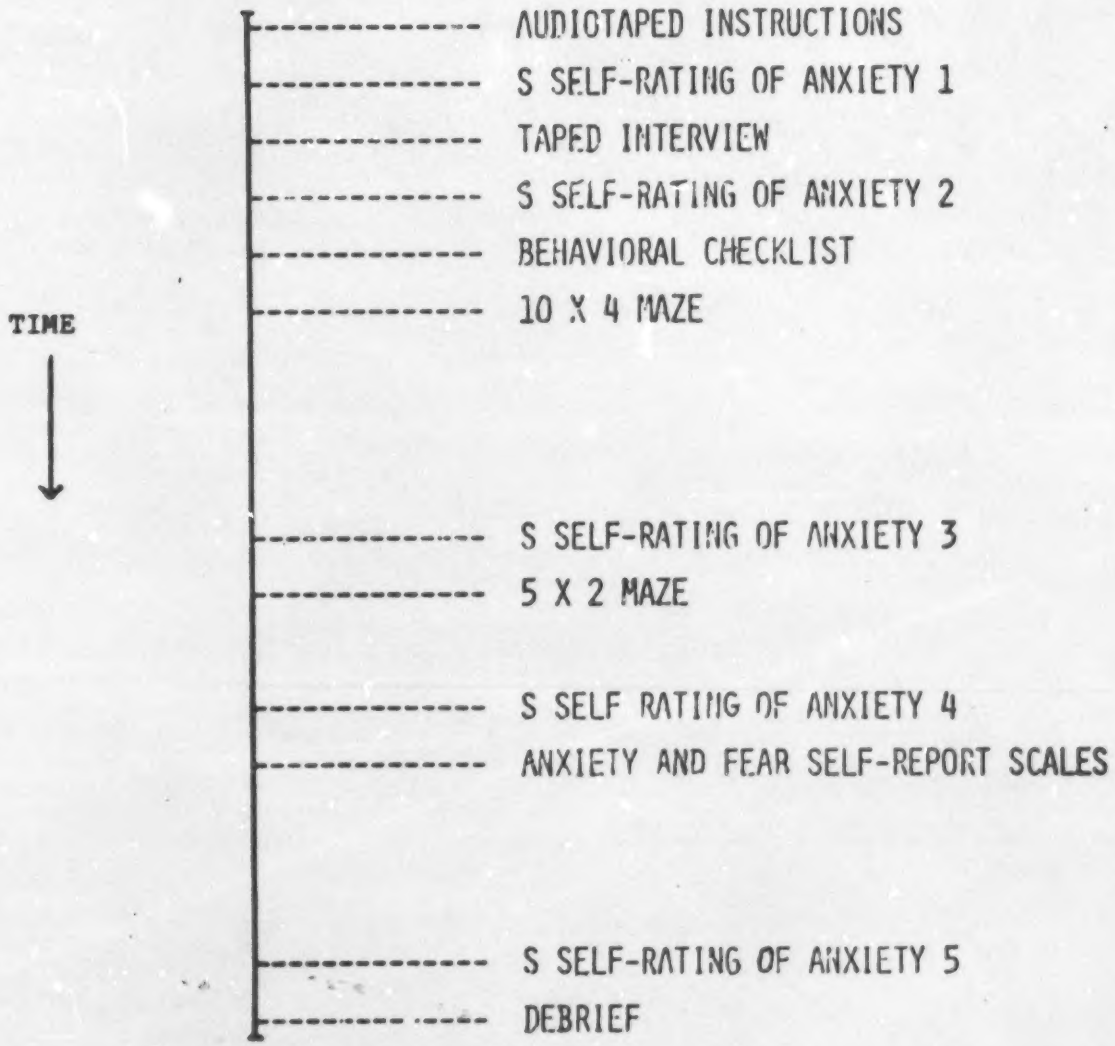

Figure 4

Errors to Criterion

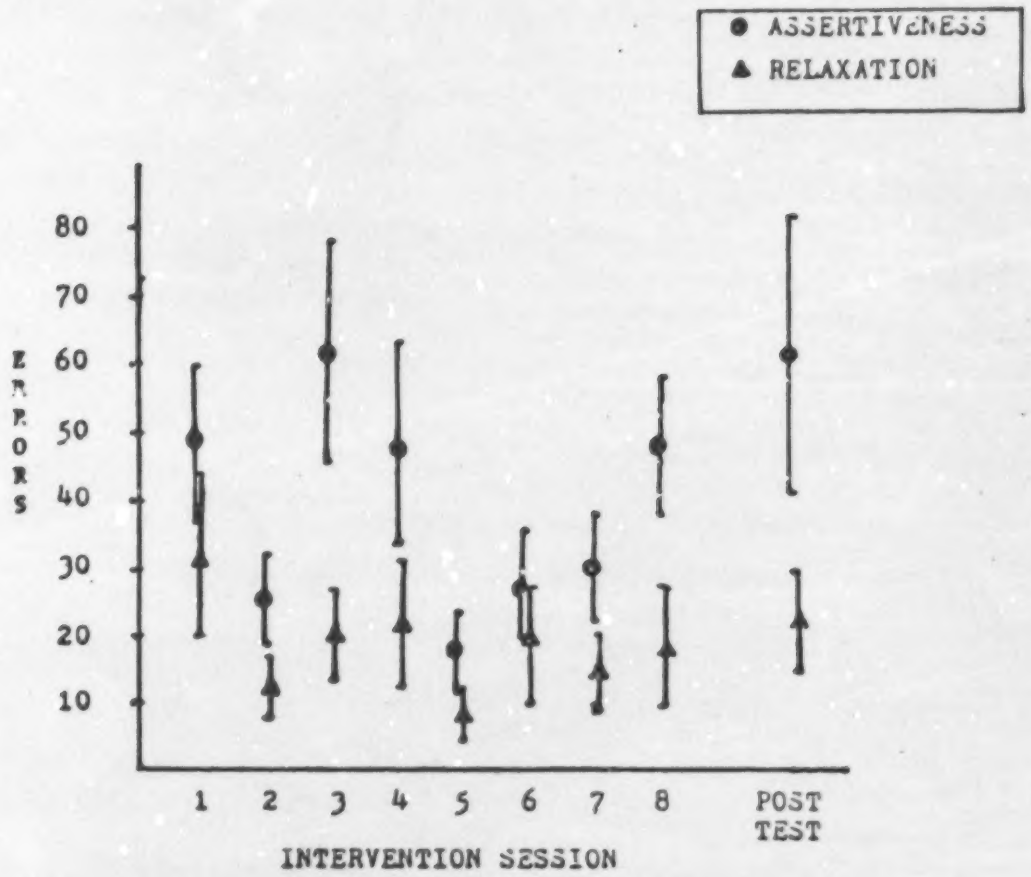

Figure 6 plots the group means on errors to criterion on each intervention day and the posttest with bars indicating one standard error of the mean. Data for each intervention day is an average of data from three maze patterns on the 5X2 maze. Data for the posttest is from one 5X2 maze pattern.

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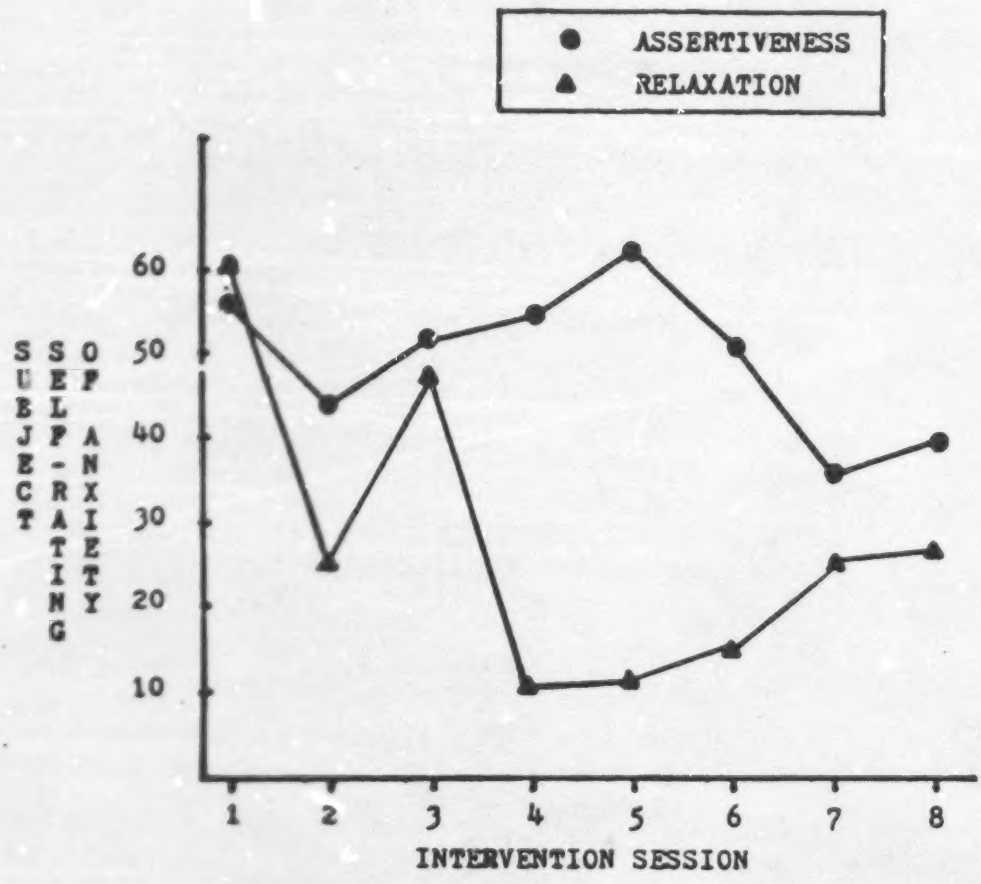
Figure 5

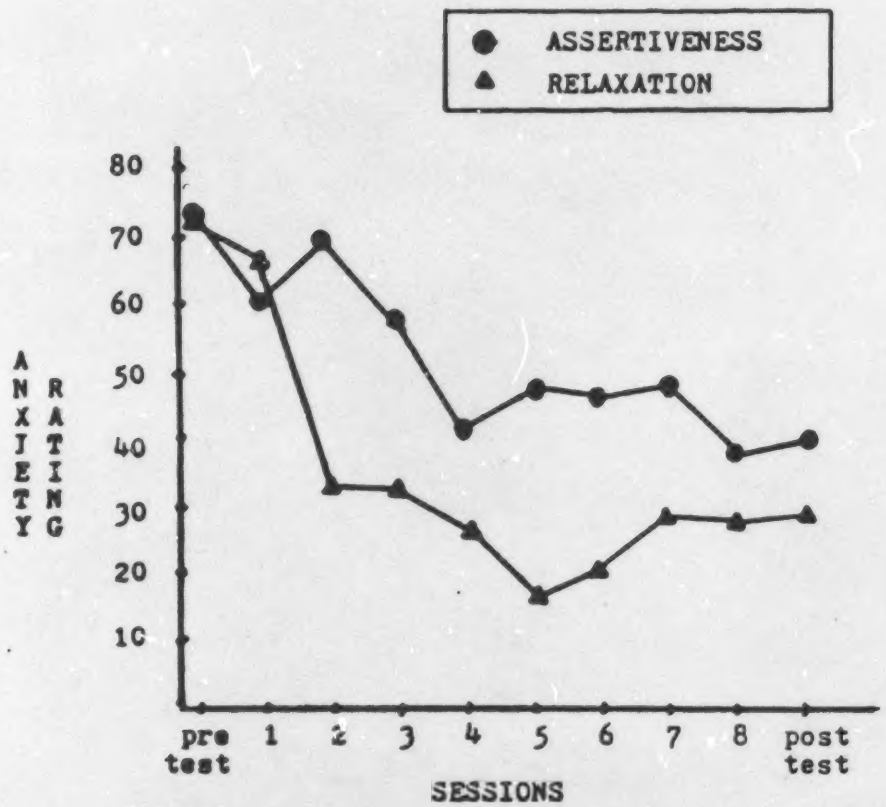
Subject rating of anxiety



Anxiety ratings were made on an unmarked 100 mm scale immediately postintervention and prior to presentation of the maze patterns. Anxiety ratings were scored on a 0-100 scale where 0 was low.

Figure 6

Experimenter rating of subjects' anxiety
on the behavioral checklist

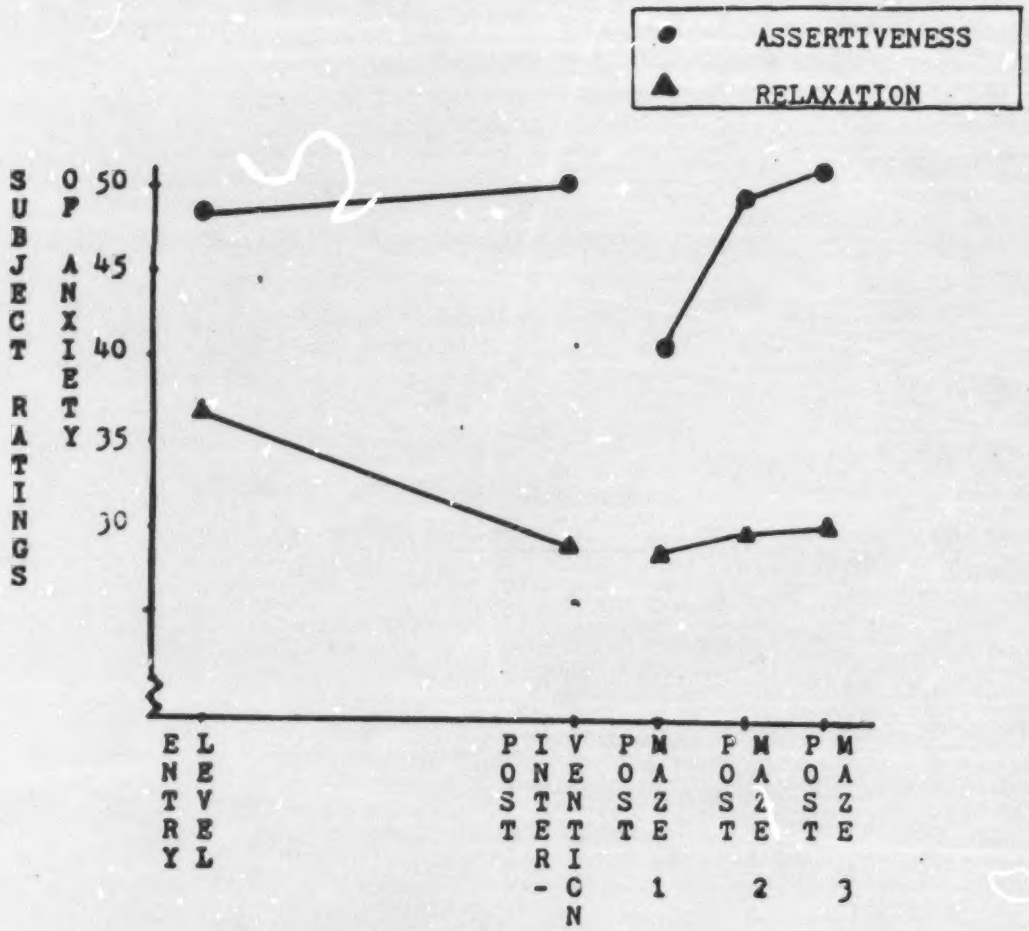


Anxiety rating scale, behavioral checklist, was zero to 100 where 100 was high and zero was low.

Ratings were all taken at approximately the same time in each session. In sessions 1-8 (intervention sessions) ratings were made immediately after completion of the intervention training and before the subjects attempted the learning patterns. In the posttest the rating was conducted prior to the subjects starting the learning patterns.

Figure 7

Intrasession Subject Self-ratings of Anxiety



Subject ratings of anxiety within each intervention were averaged for all eight intervention sessions for this plot.